

# **A STUDY OF STUDENTS' PERCEPTION OF THE LEARNING ENVIRONMENT: CASE STUDY OF DEPARTMENT OF ARCHITECTURE, COVENANT UNIVERSITY, OTA OGUN STATE**

**Eziyi Ibem, Oluwole Alagbe, Abraham Owoseni**

*Covenant University (NIGERIA)*

## **Abstract**

Studies have shown that learning environment has a significant role in determining students' academic achievement and learning. Few studies have however been done in the study area. The purpose of this study was to investigate the students' perception of their learning environment and the various building components that influence learning in such environment. An open ended structured interview was conducted amongst 22 randomly selected students of architecture of Covenant University, Ota, Nigeria in the 2016/2017 academic session. A content analysis was carried out to analyze the qualitative research data on a basic level using manual coding by grouping the responses based on thematic issues as presented in tables and word clouds. Findings revealed the meaningful patterns and themes affecting learning environment as: school design and maintenance, school structure, physical conditions and furniture arrangement.

45.5% of the respondents emphasized physical condition variables such as lighting, ventilation/air quality, noise levels, colour & decoration, as major components influencing learning environment.

54.5% emphasized furniture arrangement and physical conditions as key components of the learning environment. The culminating influence on performance and students' achievement was also highlighted with a view to improve the quality of learning environment and school design.

Keywords: Learning environment, students' perception, content analysis, Nigeria.

## **1 INTRODUCTION**

Learning takes place in multiple settings and the learning environment can be structured or unstructured and the learning in different environments can complement each other. Formal and non-formal education occurs mainly in structured environments in the form of institutions (schools, community centers, multimedia centers, learning villages/cities, etc.). Informal education on the other hand takes place in both structured and unstructured environments. Prayoonwong & Nimnuan (2010) asserted that understanding how students learn as well as their performances is by focusing on the learning environment.

Al Rukban (2010) defined learning environment as everything that is happening in the classroom or department, faculty, or university. Learning environment refers to the diverse physical locations, contexts, and cultures in which students learn. Higgins (2005) buttressed the term as encompassing the culture of a school or class and its presiding ethos and characteristics, including how students interact with and treat one another, as well as the ways in which teachers may organize an educational setting to facilitate learning. Since the qualities and characteristics of a learning environment are determined by a wide variety of factors, school policies, governance structures, and other features may also be considered elements of a "learning environment"

### **1.1 Problem Statement**

Chan (1996) stated that a good learning environment is associated with pastel coloring, appropriate lighting, controlled acoustics and proper air ventilation as a direct impact. A good learning environment frees students from physical distress, makes it easy for students to concentrate on school work and induces students in logical thinking. Students in good learning environment undoubtedly attain higher achievement. On the other hand, a poor learning environment is usually dull in coloring, inadequate in lighting, noisy in the surroundings and insufficient in air ventilation. Students in poor learning environment are under many physical constraints.

Only very few students with great determination and self-discipline can overcome all the difficulties created by such hazardous environments. On the other hand, he further asserted that students are

very sensitive to their learning environment. They respond to good and poor learning environments by expressing positive and negative attitudes respectively as an indirect impact. With a positive attitude towards their learning environment, students learn with high motivation and undoubtedly are able to demonstrate better performance. On the other hand, students' dissatisfaction with poor learning environments will lead to lowering their interest and enthusiasm in learning. Consequently, poor student performance as a result of poor learning environment is no surprise.

## **1.2 Research Questions**

The following are basic research questions of this study;

- 1 What are the components of learning environment in Department of Architecture, Covenant University?
- 2 To what extent do these components influence learning outcomes?
- 3 How can the learning environment be improved to maximize the learning outcomes of students in the Department of Architecture, Covenant University?

## **1.3 Aim of Study**

The aim of this study is to investigate the perception of students of their learning environment and the various components influencing their learning outcomes.

## **1.4 Objective of Study**

- 1 To investigate the components of learning environment in the Department of Architecture, Covenant University as perceived by the users
- 2 To evaluate the influence of these components on learning outcomes
- 3 To assess how the learning environment can be improved to maximize the learning outcomes of students in the Department of Architecture, Covenant University?

## **1.5 Scope of Study**

The Department of Architecture at Covenant University is amongst the several programs in the College of Science and Technology. It serves students from the first year to the fourth year in the undergraduate study and tier and the subsequent master's degree program. The university is located in Ota, Ado-Odo local government area of Ogun State.

# **2 LITERATURE REVIEW**

## **2.1 Components of Psychological Learning Environment**

### *2.1.1 Physical Environment & Environmental Psychology*

Learning environment is made up of both physical and psychological aspects of the environment. Physical environment has an impact on human behavior, thinking, feeling and attitude. The study of how human behavior, thinking, feeling and attitude change under different physical environments is known as Environmental Psychology.

According to Ken (2006), some learning environments are more comfortable and offer fewer distractions than others. He asserted that in any learning environment, physical characteristics that cause discomfort can be expected to interfere with learning; environments that produce positive emotional states can be expected to facilitate learning and the development of place attachment.

The areas of psychology that relate most directly to classroom design and learning environments are environmental, educational, human factors (engineering), and social psychology.

The subject of Architecture and its influence on the environment has been termed in different ways. Some of such terminologies include environment-behaviour studies, human-environment studies, social ecology human factors and behavioural architecture with the research aspect often called environmental psychology

According to Gary Moore in his studies on environment-behaviour, the basic questions to be asked to evaluate the relationships between environment and human behavior and their application in the design process are: How do people interact with the built environment? What are their needs? How do we apply such understandings in the design process?

Most times, architects make unconscious assumptions during design process with focus on functions/technical requirements. However, there are some other factors that can affect environment-behavioural influences. For example, the psychology of the users, their perception of building forms, social interaction needs, subcultural differences in their lifestyles and the meaning and symbolism of buildings.

Environmental psychology examines the interrelationship between environments and human behavior. The field defines the term environment very broadly including all that is natural on the planet as well as social settings, built environments, learning environments and informational environments. De Young (1999)

Environmental psychology is the study of human behavior and well-being in relation to the large-scale, socio-physical environment. The term, large-scale environment, refers to places such as homes, offices, neighborhoods, and whole communities. These places can be described in terms of several physical and social dimensions, including their geographical location, architectural design, membership and social organization. The term, socio-physical environment, reflects the assumption that the physical and social dimensions of places are closely intertwined. The architectural design of a housing complex, for example, can exert a subtle but substantial impact on the friendship patterns that develop among residents (*Stokols Daniel*).

#### Application of Environmental Psychology

A sensation of giving students a cognitive control, Personal Space and Territory. Environmental psychology addresses environmental problems such as density and crowding, noise pollution, sub-standard living, and urban decay. Environmental psychology is a direct study of the relationship between an environment and how that environment affects its inhabitants

There are some factors that reduce feelings of crowding within buildings. This includes:

- Windows - particularly ones that can be opened and ones that provide a view as well as light
- High ceilings
- Doors to divide spaces and provide access control
- Room shape - square rooms feel less crowded than rectangular ones
- Using partitions to create smaller, personalized spaces within an open plan office or larger work space.
- Providing increases in cognitive control over aspects of the internal environment, such as ventilation, light, privacy, etc.
- Conducting a cognitive appraisal of an environment and feelings of crowding in different settings. For example, one might be comfortable with crowding at a concert but not in school corridors.
- Creating a defensible space

## 2.2 Components of Physical Learning Environment

*"We focus on designing stimulating learning environments that facilitate intellectual curiosity in children. This involves maximizing natural daylighting and enhancing views to the surrounding site, incorporating ventilation systems that support healthier indoor air quality, and utilizing flexible programming that can easily adapt to future instructional needs."*

*-Boris Srdar; Principal, NAC Architecture*

The influence of the physical environment is obvious towards learning outcomes. According to Strange & Banning, (2001) cited in Marshall (2012), stated that the physical environment is one of the easiest to understand. The influences are obvious in nature and comprise such things as the lighting, flooring, furniture, and architecture and can also encompass layout and spaces, accessibility and cleanliness, as well as interior color schemes

An assertion by Bosque and Dore (1998), says that learning and teaching environment ought to implement six functions: inform, communicate, collaborate, produce, scaffold, and manage. Furthermore, the learning environment refers to the whole range of components and activities within which learning happens.

Anekwe (2006) viewed a learning environment as consisting of all the physical sensory elements such as colour, lighting, space, social, furniture that characterized the place in which students are expected to learn. Anekwe cited in Nwanekezi and Iruloh (2012) highlighted the learning environment as:

- The complete make-up of the parts of the home or centre used for caring for children which include the space, how it is arranged and furnished, routines, equipment and other materials
- All the variables involved in the physical, social and psychological context of learning
- The physical or virtual setting in which learning takes place
- An environment that instigates the education of the learners that are involved.

Asiyai (2014) in a similar research asserted that a conducive classroom physical environment is an agent of intellectual stimulation and important factor in strengthening the child's educational development.

In another research study by Lewinski (2015), some other factors of classroom architecture that can influence learning outcomes were highlighted. *They include:*

- Acoustics  
Noise undermines reading, writing and comprehension skills, as well as overall academic performance, as noise makes it hard to focus on the task being performed (DiSarno et al., 2002).  
Chiang and Lai (2008) reviewed previous findings on noise's harmful effect on mental and physical wellbeing as part of their study. From a plethora of demonstrable effects, the following negative outcomes were reported specifically in the context of a noisy room: getting tired easily, leading to lower efficiency; increased heart rate; dyspepsia; poor appetite; insomnia; headache; tinnitus; and facial pallor
- Light  
The quality and quantity of light (illumination) undoubtedly influences the perception of comfort in a particular space. Illumination has strong and well-documented effects, but less obvious is the case of light quality. Boray et al. (1989) undertook a study evaluating how different types of lighting (warm white, cool white, and full-spectrum fluorescent) affect various dependent variables, including: cognitive performance, room attractiveness, judged room size, and pleasure of room. They found no significant differences among all dependent variables with respect to the type of lighting used. The researchers could only conclude that management prefers warm white or cool white over full-spectrum light, chiefly because the first two are less costly to buy and maintain.
- Color  
The color green is best for classrooms Pile (1997). A further finding was that the lowest performance on cognitively demanding tasks was in classrooms with red walls.
- Temperature  
In a literature review of thermal quality and students' learning, Earthman (2002) highlighted the existence of prime temperature ranges for optimal learning outcomes. Generally, research shows that temperatures between 68 and 74°F—20 and 24°C—are most conducive to comfort and, by extension, learning. In addition, 50% relative humidity was found to be an acceptable value for classrooms (Earthman, 2002).
- Seat Arrangement  
Rosenfield et al. (1985) tested how desk and chair arrangement affected students' behavior. Elementary school children were measured according to their on-task behaviors, such as hand-raising, discussion comment, questioning/pupil request, listening, out-of-order comment, and speaking; and on their off-task behaviors, such as disruptive conduct, withdrawal, and aggression. The dependent variables mentioned above were clearly defined and measured by trained evaluators. The possible desk arrangements were clusters, rows, and circles. Results

showed that students seated in circles showed the most on-task behaviors. The second- best arrangement of desks and chairs was a cluster arrangement, and the least effective was desks arranged in rows.

Lewinski (2015) stated that in regards to seat arrangement, a design that provides many opportunities for social interaction is preferred by both students and teachers. However, numerous individual factors play a role, too. Tanahashi (2007) notes that flexibility in seating is important in that it allows for adapting to shifts in teaching styles.

Kaplan and Kaplan suggested four cognitive determinants of environmental preference:

- *Coherence*, or the ease with which a setting can be organized cognitively;
- *Complexity*, or the perceived capacity of the setting to occupy interest and stimulate activity;
- *Legibility*, or perceived ease of use;
- *Mystery*, or the perception that entering the setting would lead to increased learning, interaction, or interest.

How about technology? How has technology changed the way schools are designed today or how they seats are arranged as compared to 25 years ago? Technology has altered both the footprint as well as the layout of the current classroom. Whereas 25 years ago, computers were limited to areas within the school that dealt with either technical studies or introduction to computers, it is difficult in today's learning environment to find a space that does not include technology at some level. Fixed computer stations have made way for tablets and laptops. In turn, furniture design has been impacted and is now required to address flexible learning space. Rather than the traditional one-on-one experience that students have shared with their teachers in the past, students are learning in smaller groups with the Teacher guiding the conversation; learning takes place within the collective.

#### ★ Implications for designers

There is also the role of tutors in student's perception of their learning environment. In a research carried out by Oluwatayo et al (2012), findings of their study suggest that the perceptions of architecture students of their learning environment is not just limited to the space and effectiveness of the learning environment as suggested in previous studies, rather the perception of support from tutors and the students' body is a dimension that seems to be a pertinent factor. This aspect may be very important to the study of architecture because of the high-level social interaction that characterizes architectural study.

### **3 METHODOLOGY**

A qualitative research design was adopted in this study to investigate the viewpoints of students on their learning environment and the various components influencing their perception and performance.

Previous studies have adopted this strategy to discovering the meaning that people give to events they experience (Bogdan & Biklen, 2003; Denzin & Lincoln, 2000)

A qualitative study allows the researcher to explore phenomena, such as feelings or thought processes that are difficult to extract or learn about through conventional research methods (Strauss & Corbin, 1998). The research instruments were semi-structured interviews couple with field observations taken with photographic devices for data collection.

Variables from previous studies enhanced the design of the interview question by the researcher. A sample of 22 respondents were interviewed selected from the population of current and past Architecture students of Covenant University. An open ended structured interview was conducted in line with the research questions with field observations to assess the perception of the learning environment.

Two section of questions were grouped together in the interview. Respondents were selected randomly across different levels at the undergraduate and post graduate levels and out of school graduates.

A content analysis was carried out to analyze the qualitative research data on a basic level using manual coding by grouping the responses based on thematic issues as presented in tables and word clouds. Word clouds were created using WordleTM © 2014 Jonathan Feinberg accessible from <http://www.wordle.net/create>

## 4 FINDINGS

A content analysis was carried out on twenty-two (22) valid responses to analyze the qualitative research data on a basic level using manual coding by grouping the responses based on thematic issues as presented in tables and word clouds. Meaningful patterns and themes from research data were collated and presented in sub-sections.

### **Respondent's Characteristics**

Valid Number of respondents: 22

Range of ages of respondents: 18-27

### **Interview Question (Ideal questioning mode)**

What are the components of your learning environment? To what extent do these components influence your learning outcomes (performance and behaviour?)

Table 4.1 Showing Meaningful Patterns and theme of respondent's perception

**Table 4.1.** *Effective School System, Teaching Styles, School Maintenance as superintending components of the Learning environment*

Respondent	Answer	Thematic Issue
1.	My opinion is that the right structures is required in learning for good results or outcome, just like an athlete require good training facilities for better results so is environmental facilities ( <i>including architectural structures</i> ) important for learning. Have you ever been to a place that just the environment alone inspires you? Imagine blending such environment with a solid, functional and effective system, the product will be most definitely more outstanding than a good system without structures. Good Architectural structures built on a solid system ( <i>mode of operation</i> ) will influence performance, behaviour and classroom ambience.	<b>Effective School System School Design</b>
2	A conducive environment will definitely affect the learning outcomes of the students. Logically, one would reason that the process of creating a conducive atmosphere for learning begins with the architectural design. In more basic terms, a class with broken roof, broken floors, no windows, and no doors will leave the students distracted by whatever may be happening outside the class, unable to learn when it's raining due to the leaking roof and open windows and could also encourage vices ( <i>jumping in and out of the classroom via the window</i> ). The condition of the classrooms, skill and disposition of the teacher, peer groups/cliques, priority of the school itself ( <i>instilling knowledge, morals and all-round excellence versus giving notes and conducting exams</i> ), staff/teachers' level of satisfaction in terms of remuneration can influence behaviour.	<b>School Design Maintenance Teaching Style Teachers' satisfaction</b>
3.	Congestion, leaking roofs, lack of adequate ventilation, overcrowding in a small space do not aid learning. Easy access to library, labs, and restrooms should be strategically positioned. General environment should be kept constantly clean.	<b>Maintenance Accessibility</b>

Table 4.2 Showing Meaningful Patterns and theme of respondent's perception







Plate 4.1. Showing a Digital Design laboratory, with good lighting and colour ambience  
Source: Author's Fieldwork 2016



Plate 4.2. Showing Adequate artificial lighting at night for student's work progress  
Source: Author's Fieldwork 2016

Table 4.3 Showing Meaningful Patterns and theme of respondent's perception

**Table 4.3.** Space design, Furniture and Furniture arrangement as superintending components of the Learning environment

Respondent	Answer	Thematic Issue
10.	The looks of the classroom matters. Using windows that allow sun light to come in well to the class room in a mild and controlled way will enhance students 'performance. It will boost activeness of the students. The design of class furniture matters. How convenient are the chairs and tables? Allowing for enough space between the chairs and tables will make for a good class design.	<b>Physical Conditions &amp; Furniture/ Seat arrangement</b>
11.	A conducive environment propels learning. Space and design of the class room, seating arrangements for proper engagement	<b>Space design &amp; Seating arrangement</b>
12.	A number of environmental factors influence learning: 1) Research has proven that class seating arrangements does affect learning; seating arrangement can be territorial or functional; action zones of increased activity btw teacher & students. Nonetheless, different arrangements are more required for different learning contexts 2) Physical conditions like temperature, air quality, Noise & acoustics do affect learning	<b>Design, Facilities, Seating arrangement, physical conditions</b>





Table 4.4 Showing Meaningful Patterns and theme of respondent's perception

Respondent	Answer	Thematic Issue
13.	<p>Learning environment plays a vital role on learning outcomes since it helps in the stimulation of learning readiness in learners.</p> <p>Environment plays a vital role in the behaviour of a human being, you will agree with me that the way someone would walk, sit, handle materials, etc. in a five star hotel will be different from how the same person would behave in other environment less than a five star status. Good classroom ambience no doubt influences performance and behaviour of student and it's an essential part for a qualitative learning outcome.</p>	<b><i>Setting, Decoration, Ambience</i></b>
14.	<p>A good environment generally has a positive influence on learning outcomes. This environment can comprise of pictures of inspirational buildings and quotes, comfortable furniture that supports long term working posture and enough of natural light.</p> <p>For some reason, I think furniture arrangement can play a role in fostering behavior and performance.</p>	<b><i>Setting, Decoration, Ambience &amp; Furniture/ Furniture arrangement</i></b>

Figure 4.3. Word cloud showing frequency of use of respondents' words  
Source: Author's Fieldwork via Worldle Word clouds

**Table 4.5.** Effects of the Learning environment on Performance/Learning outcomes

Respondent	Answer	Thematic Issue
15.	Some impacts on learning include: 1. Self-awareness of student. 2. Increases focus. 3. Creates synergy between staff and students. 4. Comfort is also secured. On the other hand, 1. Mode of teaching. 2. Lighting 3. Interpersonal relationship between staff and student. 4. Practicality of literature	<b>Self-Awareness, Focus, Synergy &amp; Comfort</b>
16.	It can enhance productivity and can help to keep more students in the studio when you are comfortable. It will build in students, studio culture automatically without force	<b>Productivity &amp; Studio Culture</b>
17.	I believe life is a design. And as such, everything we see around us follows a design pattern.  As regards learning, design spurs creativity. Design influences the mind to new realities. And I want to agree that the learning environment can greatly influence the behaviour and performance of pupil's.	<b>School design &amp; Creativity</b>
18.	Good structures with adequate space and good lighting enhance learning performance. It helps to concentrate more and acquire knowledge faster.	<b>Concentration</b>
19.	I think a conducive environment reduces stress on the students and help them assimilate better compared to a crowded and stuffy environment.	<b>Stress reduction</b>
20.	Environment has been a great factor towards academic productivity. Narrowed to psychological balance/imbalance on the part of classroom users which are mostly teachers and pupils/ students; A decayed environment reduces teach-ability/ learnability of whoever is involved.	<b>Productivity &amp; Psychological balance</b>
21.	It enhances creativity in student's thought process, its serves as a subconscious form of motivation to student and also can be a source of pride among students and can affect their esteem especially among contemporaries. I think behaviour of student towards the course and attitude to life determines performance, more than classroom ambience though ambience may have its own subtle psychological impact on performance	<b>Creativity &amp; Motivation</b>
22.	Learning environment, either positive or negative influences inspiration or creativity. Classroom ambience is influenced by light and sound. Good sound is the effective transmission of sound waves. Sound disturbances such as echoes and noise can adversely affect concentration. That can in some way affect performance. Behavior on the other hand is basically influenced by the psycho-culture of the space and its users	<b>Inspiration/Creativity, Light &amp; Sound, Psycho-culture</b>

Findings revealed the meaningful patterns and themes affecting learning environment as school design and maintenance, school structure, physical conditions and furniture arrangement.

45.5% of the respondents emphasized physical condition variables such as lighting, ventilation/air quality, noise levels, colour & decoration, as major components influencing learning environment. 54.5% emphasized furniture arrangement and physical conditions as key components of the learning environment. The culminating influence on performance was also highlighted

## 5 DISCUSSION

Following the research questions of this study, the findings of this study can be discussed below

### 1 What are the components of learning environment in Department of Architecture, Covenant University?

Following this study, the various components of learning environment at the Department of Architecture were highlighted lighting, ventilation/air quality, space furniture, good acoustics,

seat/table arrangement, colour/materials, accessibility and wall decorations/displays as physical condition variables. On the other hand, psychological condition variables of the learning environment such as public spaces for social interaction, private spaces, student's personal attitude towards learning and the psycho-culture of the learning space were emphasized as well teaching style and school's system and structure.

## **2 To what extent do these components influence learning outcomes?**

The study also has revealed the influence of the various components of the learning environment on learning outcomes. From the findings, the learning environment was instrumental in influencing student's self-awareness, focus and synergy. It also directly influenced the comfort of the students. In terms of productivity and studio culture, the impact was directly reflected as well as student's creativity in design. The learning environment also influenced the rate of concentration and psychological balance of students. It aided their motivation to learn and reduced stress. Design inspiration was also enhanced as well as the comfort level of the users.

## **3 How can the learning environment be improved to maximize the learning outcomes of students in the Department of Architecture, Covenant University?**

Towards enhancing the quality of the learning environment, findings revealed that improving the components of the learning environment will directly maximize learning outcomes as obtained from the findings.

# **6 CONCLUSION**

Based on this study, the following conclusion can be drawn:

- 1 There exists, a direct correlation of the learning environment on learning outcomes.
- 2 The learning space, the adjoining physical environment and surrounding setting also impact learners
- 3 The design of learning spaces, orientation and consideration of components that affect learning environments is key for a friendly and functional design.
- 4 learning environments will require frequent post occupancy evaluation to ascertain its immediate impact on the users and their learning outcomes
- 5 Embracing a responsive design approach for creating learning environments. The findings from this study will also serve as a check for school designers and owners, educators and teachers in communicating appropriate requirements for attaining student's utmost performance and positive learning outcomes.

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